

ENVIRONMENTAL ASSESSMENT

AND

SECTION 404 EVALUATION

FOR

MAINTENANCE DREDGING

OF

KENNEBEC RIVER

BATH TO POPHAM BEACH, MAINE



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.

JANUARY 1980

FINDING OF NO SIGNIFICANT IMPACT

The Corps of Engineers, New England Division is responsible for maintaining the Federally authorized Navigation Channel in Kennebec River, Maine. The Corps is also responsible, in accordance with the National Environmental Policy Act and the Water Pollution Control Act, to investigate and present those effects associated with the project that impact the human environment and water resources -- and, where possible, minimize detrimental impacts. Various concerns regarding such impacts have resulted in the Corps proposing the project as described in this assessment to avoid more unacceptable environmental impacts, yet accomplish the critically needed maintenance of the navigation channel.

This project proposal is the result of efforts by Federal and State concerns to determine an environmentally acceptable disposal activity for the project. This plan has been designed to minimize adverse environmental effects to the aquatic ecosystem.

It is my conclusion that impacts and objectives of concern have been clearly identified in this Assessment and considered in the project specifications. The proposed disposal method has been determined, within institutional, economic, and engineering constraints, to be the most suitable alternative to accomplish maintenance of this navigation project.

DATE

MAX B. SCHEIDER
Colonel, Corps of Engineers
Division Engineer

TABLE OF CONTENTS

	<u>Page No.</u>
PREFACE	1
PROJECT DESCRIPTION	1
The Problem	1
Specific Action Description	1
ENVIRONMENTAL SETTING	3
Harbor Community	3
Vegetation	4
Aquatic Life	4
Rare and Endangered Species	4
POSSIBLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT	5
Suspended Material	5
Uptake of Contaminants	5
Benthic Organisms	6
Shortnosed Sturgeon	6
Anadromous Fish	8
Bird Nesting Colonies	8
IMPACTS OF DISPOSAL	10
ALTERNATIVES TO THE PROPOSED ACTION	11
Land Disposal	11
Open Water Disposal	13
No Action	14

COORDINATION WITH OTHERS

REFERENCES

APPENDICIES

Appendix A - Section 404(b) Evaluation for Maintenance Dredging of
Kennebec River, Bath, Maine.

Appendix B - Sediment Grain Size Analysis.

Appendix C - Shortnosed Sturgeon (Acipenser brevirostrum) in the
Kennebec River System.

Appendix D - A Discussion of Beach Nourishment as a Disposal Alternative for the Kennebec River Project.

Appendix E - Letters of Coordination.

KENNEBEC RIVER

PREFACE

This Assessment discusses the need for and the environmental impacts of the proposed maintenance dredging of the Kennebec River Federal navigation project. This action will involve the removal of approximately 50,000 yards of noncontaminated shoal material from the Federal channel. The material will be disposed of at a previously used location in the river.

The assessment examines the possible environmental impacts which might result from the project. Major areas of concern are covered including: impacts of suspended material; uptake of contaminants and impacts of disposal. All disposal alternatives are described but particular attention is devoted to the selected disposal solution.

PROJECT DESCRIPTION

The Problem

Navigation in the Kennebec River is severely restricted due to shoaling in three areas downstream of the Bath Iron Works. Large vessels can make use of the channel only during high tide. There is a continual possibility of grounding, vessel damage and oilspills. Maintenance dredging will restore the channel to its authorized dimensions thereby providing safe navigation conditions.

SPECIFIC ACTION DESCRIPTION

The Corps is proposing to maintenance dredge, a portion of the Federal navigation project in the Kennebec River (see Figure 1). Surveys of the project show the need to remove approximately 50,000 cubic yards of

sediment. All of the sediments will be dredged by a hopper dredge, transported and dumped in to the Morse Cove area of the river (see Figure 2). This disposal site has been previously used. The sediment is mostly medium to fine sand with no significant amounts of "degrading" material. Dredging would begin in June 1980 and be completed by the end of June 1980, depending on availability of equipment.

The proposed action is located in the authorized channel downstream of Bath. This provides for a channel 27 feet deep and not less than 500 feet wide, extending from the mouth to a point about 0.6 of a mile above the bridge at Bath (the portion above the bridge being currently inactive). Soundings indicate shoaling at three reaches in this channel: Doubling Point, Crow Island, and Popham Beach.

The disposal area proposed is described as follows: an area in the center of the Kennebec River approximately one-half nautical mile long in depths of water ranging from 90 to 112 feet at Mean Low Water. The northern limit of the area is opposite the southerly end of Morse Cove and the southern limit of the area is about one-half nautical mile upstream of Bluff Head.

The proposed site has been questioned by representatives of both the Maine Department of Marine Resources and the Maine Department of Environmental Protection. Questions regarding the fate of the material after dumping, as well as questions on the impact of the dumping on resident marine life, are unresolved. As a result, alternate land sites and open water sites have been investigated. They will be discussed in the section on alternatives to the proposed action.

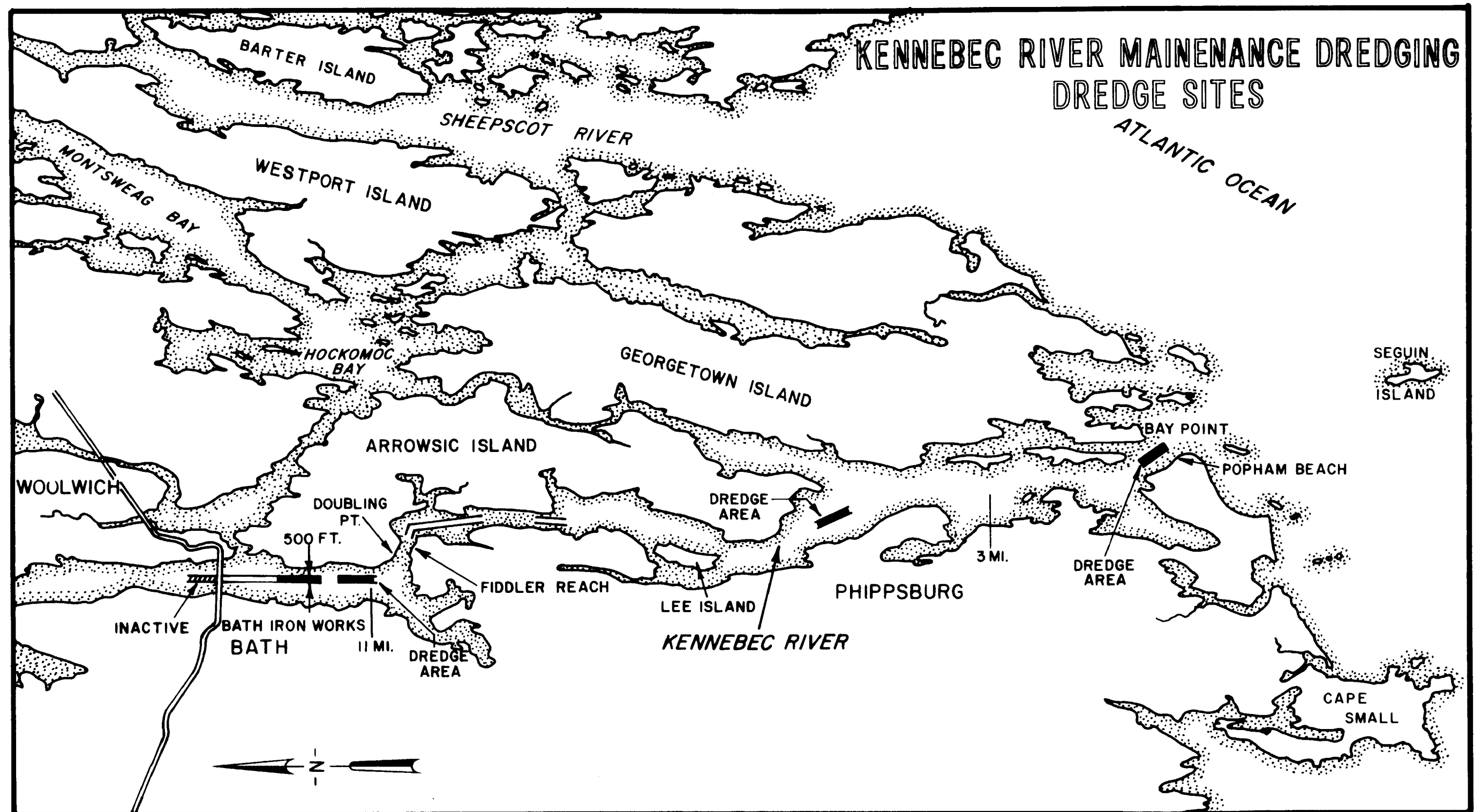


FIGURE 1

ENVIRONMENTAL SETTING

Harbor Community

The Kennebec River drains a large number of lakes and minor streams and has its source in Moosehead Lake in west central Maine and flows southward across the State through Merrymeeting Bay to the Atlantic Ocean. It is tidal and navigable to a dam at Augusta 44.5 miles above the mouth. The mean range of tide is 8.3 feet at the mouth of the river, 6.4 feet at Bath, and 4.1 feet at Augusta.

The navigation channel requiring maintenance dredging is flanked on the west by the town of Phippsburg and the city of Bath. On the east are the towns of Georgetown, Arrowsic and Woolwich. Bath, the largest municipality flanking the channel, has approximately 10,000 residents. It is approximately 39 miles north of Portland and 34 miles south of Augusta, the State Capitol. Bath is the home of Bath Iron Works, the region's largest employer (4,000 employees), which builds and repairs military and commercial ships.

Deep draft traffic in the river is primarily for vessels built or repaired at Bath Iron Works. This includes frigate and destroyer class ships for the U.S. Navy and container cargo ships for commercial firms. Additional commercial traffic includes shallow draft fishing vessels and excursion boats. Recreational craft use the river seasonally, including use of launching, docking, and mooring facilities.

Correspondence from the Port Captain of Bath Iron Works indicate increased amounts of large vessel traffic are expected during 1980 and 1981. Most of the frigates navigating to and from the shipyard will have rubber encased sonar mounts which are easily damaged in the event of grounding. Several frigate class ships will transit the river to and from Bath Iron Works over the next ten years. Each will require five or six transits for sea trials. Additional river traffic can be expected in the form of tankers and cargo ships.

Vegetation

The vegetative cover from Bath to the mouth of the Kennebec River is a mixture of upland and wetland species interspersed among developed areas. Upland sites are predominately composed of stands of mixed soft and hardwoods (white pine- hemlock- northern hardwood types) with occasional open sites (agricultural fields and gravel pits). Wetland sites along the river are primarily coastal wetlands with tidal species such as *Spartina* spp. and *Salicornia* spp. The proposed action does not affect wetland sites. Upland disposal alternative sites are discussed in the land disposal section.

Aquatic Life

Little published data pertaining directly to finfish and shellfish resources of the Kennebec River is available. It is difficult to establish parallels to other nearby areas due to the polluted conditions of the river. The U.S. Fish and Wildlife Service (FWS, 1975) sees a "tremendous" fishing potential of the river with pollution abatement.

Anadromous species constitute the bulk of the finfish resources in the lower Kennebec. Throughout the spring, summer and early fall there are heavy movements by anadromous species, with heaviest runs during spring floods (April). A summary of the migratory movements of key species is presented in Table I. Shellfish, primarily softshell clams, are common in bays and flats adjacent to the river. Restrictions on harvest are in effect due to bacterial pollution.

Rare and Endangered Species

No terrestrial species listed by the Federal government as "endangered" or "threatened" have been identified as being located in the study area. A fish, the short-nose sturgeon (*Acipenser brevirostrum*), classified as "endangered," is known to occur in the area and is discussed in the possible impacts section of this report.

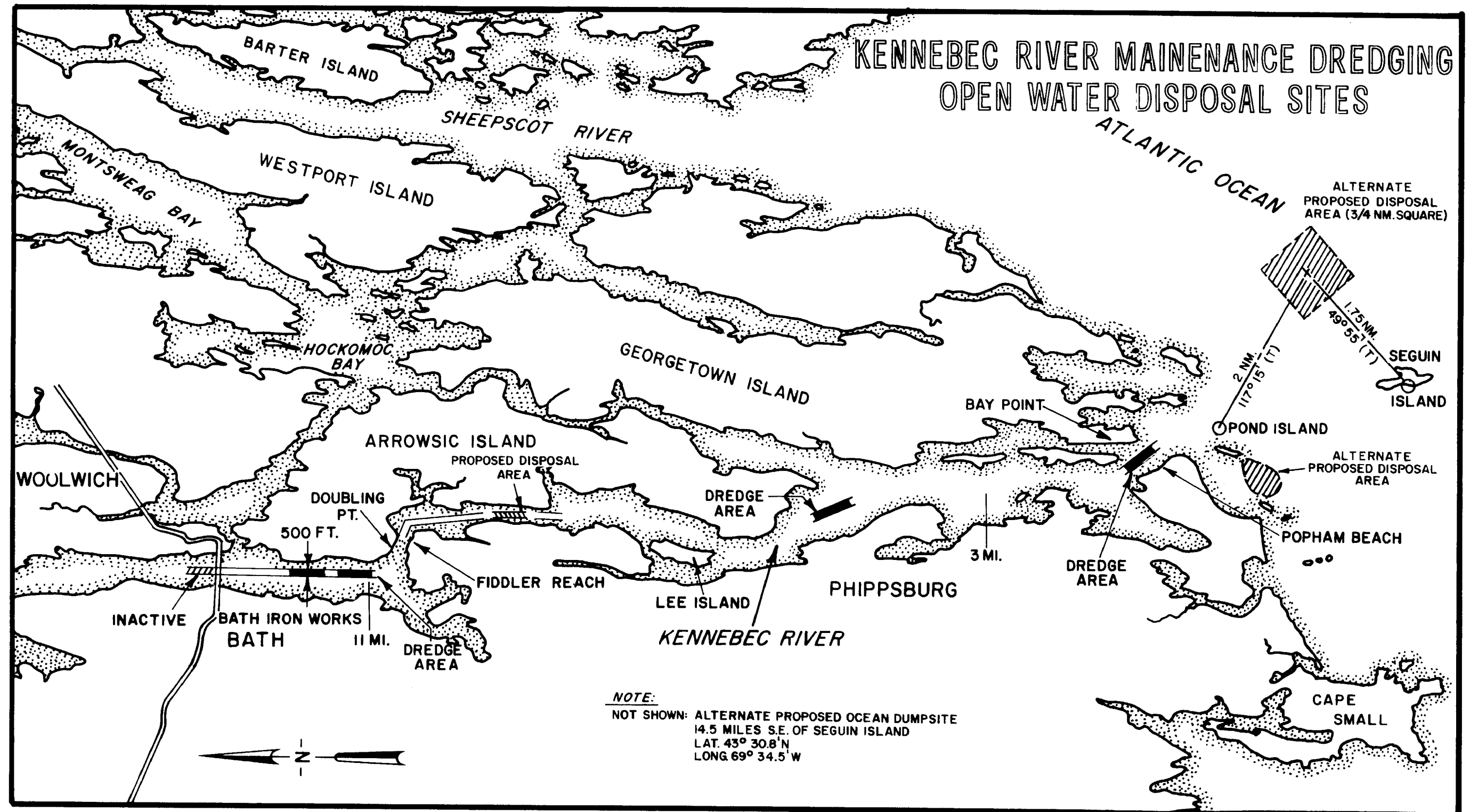


FIGURE 2

Reed and D'Andrea (1975) list the bald eagle and the osprey, both of which have been observed in or near the project area, as unofficially "rare" or "threatened". However, there are no known impacts of dredging on these species, and the project area is not classified as "critical habitat" for them.

POSSIBLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT

There are possible impacts associated with the proposed dredging of the Kennebec River navigation channel including, but not limited to the following:

1. The impacts of suspended material on aquatic organisms;
2. The uptake of contaminants, if present, at the dredge and disposal site.
3. The impact of dredging on benthic organisms;
4. The overall impact of dredging and disposal of sediments on the shortnosed sturgeon (Acipenser brevirostrum), and other anadromous species;
5. The impacts of dredging on bird nesting colonies.

Suspended Material

Sediment samples from each of the three proposed dredge sites have been analysed. Results are presented in Appendix B. The grain size (medium to fine sand) and overall composition of the sediments are sufficient to preclude further testing. Temporary and localized increases in turbidity, reductions in dissolved oxygen, and releases into the water column of nutrients may occur as a result of both dredging and disposal operations. These impacts are unavoidable; however, they should be minimal, given the large particle size and relatively clean nature of the material to be dredged, and the dispersive currents in the river.

Uptake of Contaminants

Samples at the proposed dredge sites confirmed the clean, sandy nature of the bottom material. These sediments are considered to be free of

significant amounts of pollutants under Section 404(b)(1) criteria published 18 September 1979 (Federal Register).

Benthic Organisms

Another significant effect at the dredging site is physical removal of benthic organisms. However, after dredging, the dredged area is likely to be recolonized. Several studies have been performed to document this phenomenon (Soule, 1976; Saila et al, 1972; Pratt et al, 1973). Recolonization of both dredging and disposal sites begin with dominance by a few opportunistic species, and the transition to a species balance similar to nearby undisturbed areas requires several years. It may be assumed that the benthic communities in these shoal areas are not stable because of strong river currents, significant material movement and frequent maintenance dredging.

Shortnosed Sturgeon

The shortnosed sturgeon is classified by the U.S. Department of Interior as "endangered". This species is known to exist in the Kennebec River and adjoining estuaries. The Maine Department of Marine Resources is currently engaged in studies to determine baseline data about the species, particularly about its population and seasonal distribution. Appendix C contains a discussion of current information about the occurrence of the shortnose sturgeon in the Kennebec River.

The Corps initiated coordination with the National Marine Fisheries Service (NMFS) with a February, 1978 letter for the purpose of consultation on the shortnosed sturgeon and the navigation project in the Kennebec River. Their reply of April, 1978 states that, although the data available is very limited, the proposed dredging in the Kennebec will not have an adverse impact on the population if the operation does not occur during spawning periods, or periods of low bottom salinity. A proposed operation date of June 15 to 30 meets these criteria. Coordination with NMFS and other Federal and State agencies is continuing at this time (see Appendix C and E).

Table I

Migratory Movements in the Kennebec River

<u>Species</u>	<u>Adults</u>		<u>Juvenile</u>
	<u>Up-river</u>	<u>Down-river</u>	
Alewife	Apr-June	June-July	August-Oct.
American Eel	--	Sept-Nov.	Apr-June (elvers, upriver)
Atlantic Salmon	June-July	Nov-Dec	Apr, May (smolts)
Atlantic Sturgeon	Apr-June	August-Oct	August-Oct
Shad	Apr-June	June-July	August-Oct
*Short-nosed sturgeon	Apr-Aug	Sept-Oct	
Smelt	Sept-Nov	Apr-May	August-Oct
Striped Bass	June-July	Sept-Oct	

Sources: FWS (1975)

Bigelow and Schroeder (1953)

Flagg (personal communication)

Dadswell (1976)

*Based on studies conducted in St. John River Estuary, Canada, by Dadswell (1976) and the recent tagging program by Maine Department of Marine Fisheries.

Anadromous Fish

The Kennebec system has a major anadromous fish population during the spring and summer months. Peak spawning runs occur during flood tides in April and May (see Table I). The clean, sandy sediments are not believed to be detrimental to water quality or to the general welfare of the species present. The operation would not affect spawning sites, and the proposed schedule (late June) is after peak upstream migrations.

Bird Nesting Colonies

The U.S. Fish and Wildlife Service has expressed concern over the possible disturbance of bird nesting colonies close to the dredge sites (see Appendix E). There are four areas within or near the Kennebec River with active nesting colonies comprised of four species of terns, two species of gulls and one duck species. Three of the areas (Pond Island, Wood Island and Morse Point) will not be affected by dredge or disposal operations as the Corps will not use the Pond Island alternative disposal site. The area of primary concern is North Sugarloaf Island, located in the river approximately 150 yards east of the proposed Popham Beach dredge site. An estimated 700 pairs of terns (three species) nest on this island in May, June and July.

The Corps agrees that dredging operations in early summer is not the best time to avoid possible impacts on nesting colonial birds. However, there is strong probability that hopper dredge activities will not be intolerable to the nesting birds for two reasons:

- * the birds may become acclimated to large vessel traffic during courtship, nest selection and egg-laying phases of the breeding season.

- * colonies are less severely affected by human disturbance during the incubation and brooding phases than during the earlier phases mentioned above.

The Corps has dredged the Popham Beach reach of the Kennebec River repeatedly over the past 35 years. Dredging operations have been conducted in July with no reports of adverse effects on the tern colony at North Sugarloaf Island.

Mortality of eggs or juveniles occurs most frequently when adult birds are frightened away from the nests during adverse weather conditions such as very hot or cold, foggy days. Dredging of the Popham Beach site will be scheduled after the other two sites to allow the majority of nesting pairs to lay their eggs and begin incubation (late June-early July). A Corps biologist will be assigned to the dredge during operations at the Popham Beach site to observe the colony's behavior and reactions to the dredge. The master of the vessel would be instructed to postpone dredging during adverse weather conditions should the birds exhibit nest abandonment reactions to dredging operations.

IMPACTS OF DISPOSAL

Environmental impacts of disposal in the Kennebec River site are not estimated to be significant. The disposal site has been used frequently during past dredging operations. It received over 33,000 cubic yards of dredged material in 1975. There is no information available on movements of the material once it has been dumped. (Two divergent theories exist linking upriver dredging and disposal to erosion at Popham Beach and are discussed in another section).

Other environmental data on the upriver disposal area are also lacking, as no monitoring has taken place during previous disposal operations. The absence of data makes the predictions of environmental impacts from in-river disposal difficult. It may be expected, however, that temporary and localized turbidity will result from the disposal operations, and that localized burial of benthic species will occur. The nature of these impacts will be affected by current and bottom conditions at the site, neither of which is completely known.

The Corps of Engineers will cooperate with the Bath Iron Works and the Maine Department of Marine Resources in a sediment accumulation study on the Parker Flats downstream of the proposed disposal site to determine if the clams are effected by the disposal operation. The study will collect baseline data before the operation and monitor effects during and after dredging activities.

Few efforts have been made to monitor the discharge of a bottom-dumping hopper dredge. Most of the efforts have been for projects involving silts and clays, which behave in an entirely different manner from sand. The only comprehensive study of sand dumping from a hopper dredge is that of Sustar and Ecker (1972), who used a variety of techniques, including divers, at an operation offshore from the entrance to San Francisco Bay. They found that, on bottom contact, sand surged radially outward so rapidly that the maximum bottom deposition was only two inches. Although this result cannot be extrapolated to the present discussion quantitatively, it indicates that a series of dumps will change

the elevation of existing ocean bottom by a small amount. At the river site, sand will be contained within the river bed and will tend to be elongated axially.

Burial of bottom organisms will occur at the dumpsite whether ocean or river. From the standpoint of commercial fisheries (including lobsters), and ecological values, impacts will not be severe at the site. The river site is not fished extensively and, due to high currents in the area, benthic life is not expected to be diverse.

The most recent Federal regulations regarding dredged material disposal criteria were published on September 18, 1979 (Federal Register). That promulgation revises earlier rules published on January 11, 1977 (Federal Register). The most recent criteria states, in part, that materials which meet the following description are acceptable for ocean dumping without further testing:

"Dredged material is composed predominantly of sand, gravel, rock, or any other naturally occurring bottom material with particle size larger than silt, and the material is found in areas of high current or wave energy such as streams with large bed loads or coastal areas with shifting bars and channel."

The proposed action meets these criteria.

ALTERNATIVES TO THE PROPOSED ACTION

Land Disposal

Upland Sites

Upland disposal sites as an alternative to open water disposal was rejected due to expense and adverse environmental impacts. Disposal of dredged material on Hunnewell and Popham Beaches is discussed in the section entitled Beach Nourishment and Appendix D.

Upland disposal sites may be available for the dredged material in both Bath and Georgetown. In Bath, the possibility of filling in a portion of the city dump exists, as well as the use of gravel pits owned by a local contractor. Several abandoned gravel pits which could possibly be used exist in Georgetown. Possible staging areas have been identified near the Bath Iron Works in Bath (though this area's availability remains questionable) and on the river-front near West Georgetown. Local officials contacted in both cases would consider the possibility of upland disposal.

Upland disposal would require a hopper dredge with pump-out capability and a barge-pipeline system similar to that depicted in Figure 3, Appendix D. Costs would be high and in the case of the Bath area sites, truck traffic would have to pass through local residential areas. This would pose a noise and dust problem. Truck trips would number in the thousands. Previous trucking of dredged material, done by Bath Iron Works, required the hiring of sweepers who cleaned up material spilled onto the roads. Further problems could be encountered with the potential intrusion of saline water into local ground water supplies should abandoned gravel pits be used for disposal.

Beach Nourishment

The use of dredged material as a resource for beach nourishment is one option considered for the Kennebec River project. The sediments are mostly clean sand of medium to fine grain size. There are major constraints which prohibit the Corps from using this disposal option at this time. The difference between the Corps' cost of disposing of the sand in the river and any additional cost incurred for beach nourishment must be assumed by some organization other than the Corps. Attempts at pumping from the vessel to the beach would be effected adversely by heavy seas which are prevalent at the site. In addition, about two years notice would be needed for scheduling extra pumping equipment. (See Appendix D).

Open Water Disposal

An alternative disposal area is located as follows:

An area about one nautical mile long located between Jackknife Ledge and Pond Island about 1,200 yards seaward of Wood Island in Pond Island Shoal. Use of this area would be contingent upon the suitability of the material, tidal stage, weather conditions, and the judgment of the master of the dredge as to whether it would be safe to transit these waters. The depth of water ranges from 10 to 35 feet at Mean Low Water.

The accuracy of navigation charts depicting the Pond Island area has been questioned. Discussions with local fishermen and other knowledgeable people confirm the fact that the Pond Island Shoal is 10 to 15 feet shallower than many soundings appearing on 1978 charts. The draft limits of a hopper dredge as discussed in the Land Disposal Section also apply to this site.

The Pond Shoal site is considered as a replacement for the Sequin Island site described later in this section. This site would not interfere with local and regional fishing operations, and there is a possibility of nourishing Hunnewell Beach through littoral transport of disposed sediments. However, attempts at bottom dumping from hopper dredges or barges at locations from which sand was intended to migrate to the beach have not been successful.

Two additional open water disposal sites have been considered. The Sequin Island site, last used in 1971, is an area three quarters of a nautical mile square, the sides of which run northeast - southwest and northwest - southeast. The center of the disposal site is at a point 2.0 nautical miles from Pond Island Light on a bearing $117^{\circ}15'$ True and 1.75 nautical miles from Sequin Island Light on a bearing of $49^{\circ}55'$ True. The depth of water ranges from 87 to 116 feet at Mean Low Water. Local fishermen requested this site not be used, citing detrimental effects on equipment and subsequent temporary reduction in catches at the site attributed to disposal operations in previous years (Chase, 1977).

A deep water site located at Loran coordinates 1H3-2745, 1H5-1352 and 1H7-1335 was suggested by local fishermen. This site is a mud-bottom hole approximately 14 miles southeast of the mouth of the river. The site is rejected because of economic unfeasibility due to the distance the dredge would have to travel and a lack of biological data to determine impacts of dredge material on the site.

No Action

The "no dredging" alternative would allow the current severely shoaled situation to continue unabated and would lead to even more hazardous conditions than presently exist in the channel. Lack of maintenance would also have a detrimental effect on the waterborne economics of the area. A recent example of detrimental economic impact occurred in April 1979 when the guided missile frigate U.S.S. MCINERNEY (FFG-8) missed high tide while returning from sea trials and had to anchor offshore for one extra day because shoaling in the channel precluded passage during low tides. This delay cost an estimated \$135,000 in payroll overtime and associated costs to Bath Iron Works and the government.

COORDINATION WITH OTHERS

This project is being planned by the Corps of Engineers in cooperation with Federal, State and local concerns. Coordination has involved written and verbal communication among individuals and agencies.

A public notice was issued 3 January 1980 describing the proposed plan of action. Comments by all interested persons and agencies may be submitted to the Corps within 30 days of issuance of this assessment. (See Appendix E for letters of coordination).

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B. Other Communications

Barrett, B.E., New England Division, U.S. Army Corps of Engineers, Waltham, MA.

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Flagg, Louis, Research Division, Maine Department of Marine Resources,
Augusta, Maine.

Hutchinson, A., Maine Department of Inland Fisheries & Wildlife, Orono, ME.

Irwin, M., U.S.F. & W.S., Pawtuxet Wildlife Research Center, Laurel, MD.

Landin, M., Waterways Experiment Station, Corps of Engineers, Vicksburg, MS.

McCleave, J., Department of Zoology, University of Maine, Orono, ME.

Mitchell, E., Maine Department of Marine Resources, Fisheries Research
Station, West Boothbay Harbor, ME.

Nelson, B., University of Maine, Ira C. Darling Center, Walpole, ME.

Rich, W.L., Port Captain, Bath Iron Works, Bath, ME.

Timson, B., Maine Department of Conservation, Bureau of Geology, Augusta, ME.

Appendix A

Section 404(b) Evaluation for Maintenance Dredging of Kennebec River Bath, Maine

References.

- a. Section 404(b) of Public Law 92-500, Federal Water Pollution Control Act
- b. 40 CFR 230.4 - 230.5 dated 5 September 1975
- c. EC 1105-2-90 Appendix C, dated 8 May 1979
- d. Section 7, Public Law 93-205, Endangered Species Act of 1973

The Proposed Project

The proposed project calls for maintenance dredging of the Federal channel in Kennebec River downstream of Bath, Maine to restore the channel to its authorized dimensions. This action will involve the removal of approximately 50,000 c.y. of shoal material by hopper dredge with disposal at a specified point within the Kennebec River. The material to be dredged is clean, medium to fine grain sand, with very few fines.

Project Authorization

The Federal navigation project at Kennebec River, Maine was authorized under the River and Harbor Act, of 1919 and modified in 1945.

Environmental Concerns

Six major areas of concern have been identified in conjunction with the proposed dredging of Kennebec River. These are:

- (1) the impacts of suspended materials on estuarine biota
- (2) the uptake of contaminants at the dredge and disposal site
- (3) the impact of dredging and disposal of sediments on benthic organisms
- (4) the impacts of dredging and disposal operations on erosion/accretion dynamics of the estuarine, particularly Popham Beach
- (5) the impact of dredging and disposal of sediments on the Short-nosed Sturgeon (Acipenser brevirostrum) an endangered species.
- (6) the impact of dredging operations on bird nesting colonies located close to dredge sites.

In-depth discussions on each of these topics can be found in the Environmental Assessment for Maintenance Dredging of the Kennebec River, Maine, January 1980, prepared by the New England Division, Army Corps of Engineers.

Technical Evaluation

A technical evaluation with respect to disposal of dredged material and potential environmental impacts resulting from such disposal has been completed. The results are presented on page 4. Concomitant reading of or adequate familiarity with Section 404(b) Guidelines will insure understanding of results presented in the technical evaluation.

Conclusions

Determinations

- a. An ecological evaluation has been made following the evaluation guidance in 40 CFR 230.4, in conjunction with the evaluation considerations in 40 CFR 230.5.
- b. Appropriate measures have been identified and incorporated in the proposed plan to minimize adverse effects on the aquatic environment as a result of the discharge (See Environmental Assessment for Maintenance Dredging of Kennebec River, Maine January, 1980).
- c. Consideration has been given to the need for the proposed activity, the availability of alternate sites and methods of disposal that are less damaging to the environment, and such water quality standards as are appropriate and applicable by law.
- d. Discharge of dredged material into wetlands will not occur. The proposed disposal site for dredged material from Kennebec River is an open water site within the Kennebec River.

Findings.

The discharge site for the maintenance dredging of Kennebec River, Maine has been specified through the application of the Section 404(b)(1) Guidelines.

The project files and Federal regulations were reviewed to properly evaluate the objectives of Section 404 of Public Law 92-500. A public notice with respect to the 404 Evaluation and Environmental Assessment was issued on January 3, 1980. Based on the information presented in both the Technical Evaluation and Environmental Assessment, and in light of the economic need to maintain Kennebec River, I find that the project will not result in unacceptable adverse impacts to the environment.

Date

MAX B. SCHEIDER
Colonel, Corps of Engineers
Division Engineer

Technical Evaluation

230.4-1 Physical and Chemical - Biological Interactive Effects.

(a) Physical Effects (1 through 3)

(1) Effects on Wetlands

Dredging is expected to result in some siltation along adjacent shorelines as fine grained sediments settle out of the water column. This is expected to be temporary and may not be significantly greater than the ambient estuarine conditions found at Kennebec River.

(2) Effects on the Water Column

Both dredging and disposal may result in increased turbidity, a reduction in light transmission that may cause direct destruction of nektonic and planktonic populations. These conditions are expected to be temporary and should dissipate once dredge/disposal operations are completed.

(3) Effects on Benthos

Dredging will destroy any benthic populations inhabiting the immediate work area. At the disposal site, attached and burrowing benthic organisms would be buried by sediment. Sediment settling effects at the dredge and disposal site would produce some stress on benthic organisms.

(b) Chemical - Biological Interactive Effects (1 through 3).

- (1) Dredged material from Kennebec River would meet specifications outlined in paragraphs (b)(1)(i)(ii) or (iii) of this section. Consequently, evaluation procedures specified in paragraphs (b)(2) and (3) need not be addressed.

- (i) Dredged material would be predominantly medium to fine sand as opposed to silt or clay sedimentary material.

(ii) Dredged material is suitable for beach nourishment or restoration.

(iii) (a) Dredged material from Kennebec River is substantially the same as the substrate found at the proposed disposal site. (See Environmental Assessment, Kennebec River, Maine, January 1979).

(b) The proposed dredge site can be considered sufficiently removed from sources of pollution to provide reasonable assurance that the material has not been contaminated.

(c) Adequate terms will be imposed on the discharge of dredged material to insure the operation proceeds in a manner that will be least damaging to the environment outside the disposal site.

(2) Water Column Effects

It is believed that with normal turbid conditions common in estuarine environments and tidal flushing to dilute any possible contaminants that may be released, any effects to the water column will be minimal and temporary.

(3) Effects on Benthos.

230.4-1 (c) Procedure for Comparison of Sites (1 and 2)

(1) Bulk sediment analysis of the proposed dredge sites was conducted on samples taken in December, 1979, by the New England Division, Corps of Engineers. Results of these tests are presented in the Kennebec River Environmental Assessment. The sediment analysis confirms the presence of clean medium to fine sand which do not require elutriate or bioassay testing.

(2) No samples of the deepest portions of the proposed disposal site have been taken. The disposal site is assumed to be similar to the sandy bottom found throughout the navigation project.

230.4-2 Water Quality Considerations

The proposed discharge will not violate any appropriate or legally applicable standards.

230.5 Selection of Disposal Sites and Conditioning of Discharges of Dredged or Fill Material (a through e).

(a) General Considerations and Objectives (1 through 8).

- (1) Discharge activities should not significantly disrupt the chemical, physical or biological integrity of the aquatic ecosystem (See Environmental Assessment Kennebec River, Maine 1980).
- (2) Discharge activities should not significantly disrupt the food chain or result in an alteration or decrease in diversity of plant or animal species.
- (3) Discharge activities will be scheduled to avoid inhibiting faunal movement into and out of breeding, spawning or nursery areas.
- (4) Discharge activities will not affect any wetlands.
- (5) Discharge activities will not destroy or isolate areas that serve the function of retaining natural high or flood waters.
- (6) Discharge activities will temporarily increase turbidity levels at the disposal site. Ambient conditions should return shortly after disposal activities are completed.
- (7) Discharge activities will temporarily reduce aesthetic values at the disposal site. Recreational and economic values are not expected to be either enhanced or reduced at the disposal site.
- (8) Degradation of water quality will be avoided through application of Sections 230.4, 230.5 (c) and (d), as appropriate to this project.

230.5(b) Considerations Relating to Degradation of Water Uses at
Proposed Disposal Sites (1 through 10).

(1) Not applicable. No municipal water supply intakes are located in or near the proposed disposal site.

(2) Shellfish (i through iv)

(i) The disposal site is not designated as an area of high shellfish concentration .

(ii) Not applicable. Sediments are considered free of pollutants.

(iii) Dredged material would not create any topographic anomalies that would result in undesirable changes to current patterns, salinity patterns or flushing rates that would affect shellfish.

(iv) Disposal operations will be scheduled to minimize interference with reproductive processes and avoid undue stress to juvenile forms of shellfish.

(3) Fisheries (i through iii).

(i) No significant disruption of fish spawning or nursery areas is expected as a result of the proposed discharge.

(ii) Dredging and disposal schedules will be coordinated with appropriate Federal and State agencies to insure minimal interference with fish spawning cycles and migration patterns or routes.

(iii) There is no significant submersed or emergent vegetation at the disposal site.

(4) Wildlife

There should be no significant disruption to wildlife habitat, food chains or community structure as a result of the proposed discharge. The disposal site is not designated as a marine or aquatic sanctuary, or adjacent to designated marine or aquatic sanctuaries (see discussion of shorebird colonies, environmental assessment, Kennebec River).

(5) Recreational Activities (i through iv)

(i) Reasonable methods will be employed to minimize any increased duration of turbidity which would reduce the numbers and diversity of fish, or cause a significant aesthetically displeasing change in the color, taste or odor of the water.

(ii) Disposal operations should not result in eutrophication, or impair recreational values. Aesthetic values will be temporarily reduced as a result of the discharge.

(iii) Discharge of dredged material will not result in unacceptable levels of pathogenic organisms in areas used for recreational purposes.

(iv) Dredged material does not contain harmful quantities of oil or grease as defined in 40 CFR 110.

(6) Threatened and Endangered Species

The proposed discharge will not jeopardize the continued existence of any threatened or endangered species, or destroy or modify the habitat of those species determined critical in accordance with the Endangered Species Act. (See Appendices C&E, Environmental Assessment, Kennebec River, Maine, 1980)

(7) Benthic Life

The proposed disposal site is an established and active dump site.

Benthic organisms inhabiting the immediate area would be destroyed during disposal. Repopulation should commence shortly after disposal is completed, with neighboring communities releasing larva that might settle on the disposed material.

(8) Wetlands (i and ii)

(i) Not applicable. There will be no disposal of dredged material in wetlands.

(ii) Not applicable. The proposed project does not involve discharge of fill material.

(9) Submersed Vegetation

There is no significant submersed vegetation in or adjacent to the disposal site.

(10) Size of Disposal Site

An area in the center of the Kennebec River approximately one-half nautical mile long and 200 yards wide in depths of water ranging from 84 to 112 feet at Mean Low Water.

230.5(c) Other Considerations Concerning Determination of Disposal Site and Disposal Conditions (1 through 7)

- (1) Appropriate scientific literature has been incorporated in the project design and the Kennebec River Maintenance Dredging Environmental Assessment prepared by the Corps of Engineers, NED, January 1980. This technical evaluation is based on findings and recommendations presented in the Environmental Assessment for Kennebec River.
- (2) Alternatives to open water disposal were considered during plan formulation. (See Environmental Assessment, Kennebec River, Maine, January 1980). All alternatives were found to be either environmentally undesirable or economically unjustifiable.
- (3) There is insufficient information to determine whether or not the disposal area is a containment site.
- (4) Disposal seaward of the baseline of the territorial seas is economically unjustifiable and may not be environmentally acceptable.
- (5) Not applicable. No sediments requiring capping exist at the dredge sites.
- (6) Not applicable. Disposal operations will not occur in a confined area.

230.5(d) Contaminated Fill Material Restrictions

Not applicable. The discharge of fill material will not occur in conjunction with the proposed project.

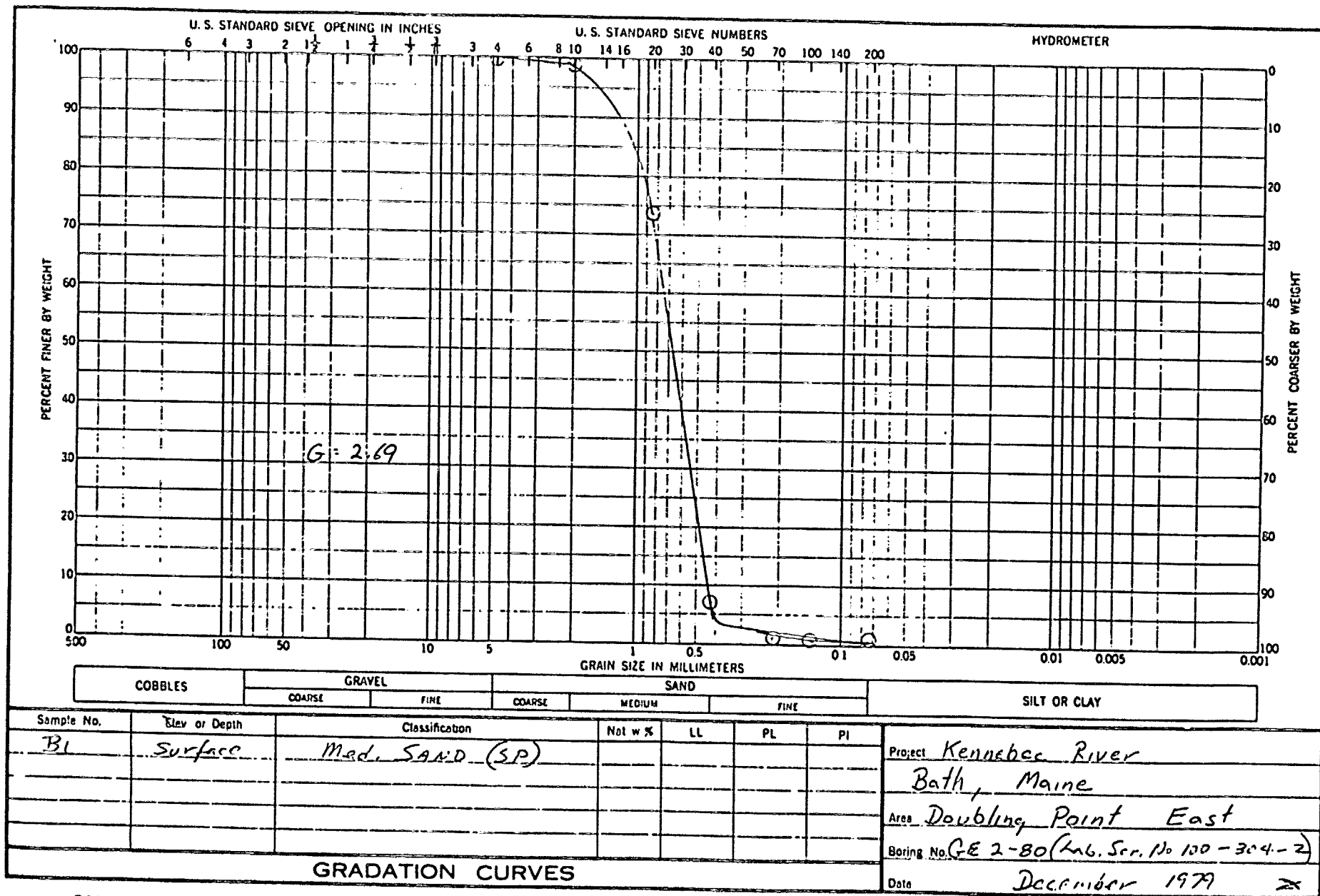
230.5(e) Mixing Zone Determination (1 through 6)

- (1) The disposal site is approximately one mile long and 200 yards wide with depths ranging from 84 to 112 feet at Mean Low Water. It is more than large enough to receive the estimated 50,000 c.y. of dredged material from the Kennebec River.
- (2) No site specific data on current velocity, direction or consistency is available at this time.
- (3) Considerable turbidity is found throughout this area of the Kennebec River. Disposal activities will temporarily increase turbidity levels.
- (4) Stratification of dredged material is not expected to occur during discharge.
- (5) Site studies or models with respect to mixing patterns at the disposal site have not been developed.
- (6) Factors that might effect rates and patterns of mixing at the disposal site have not been investigated.

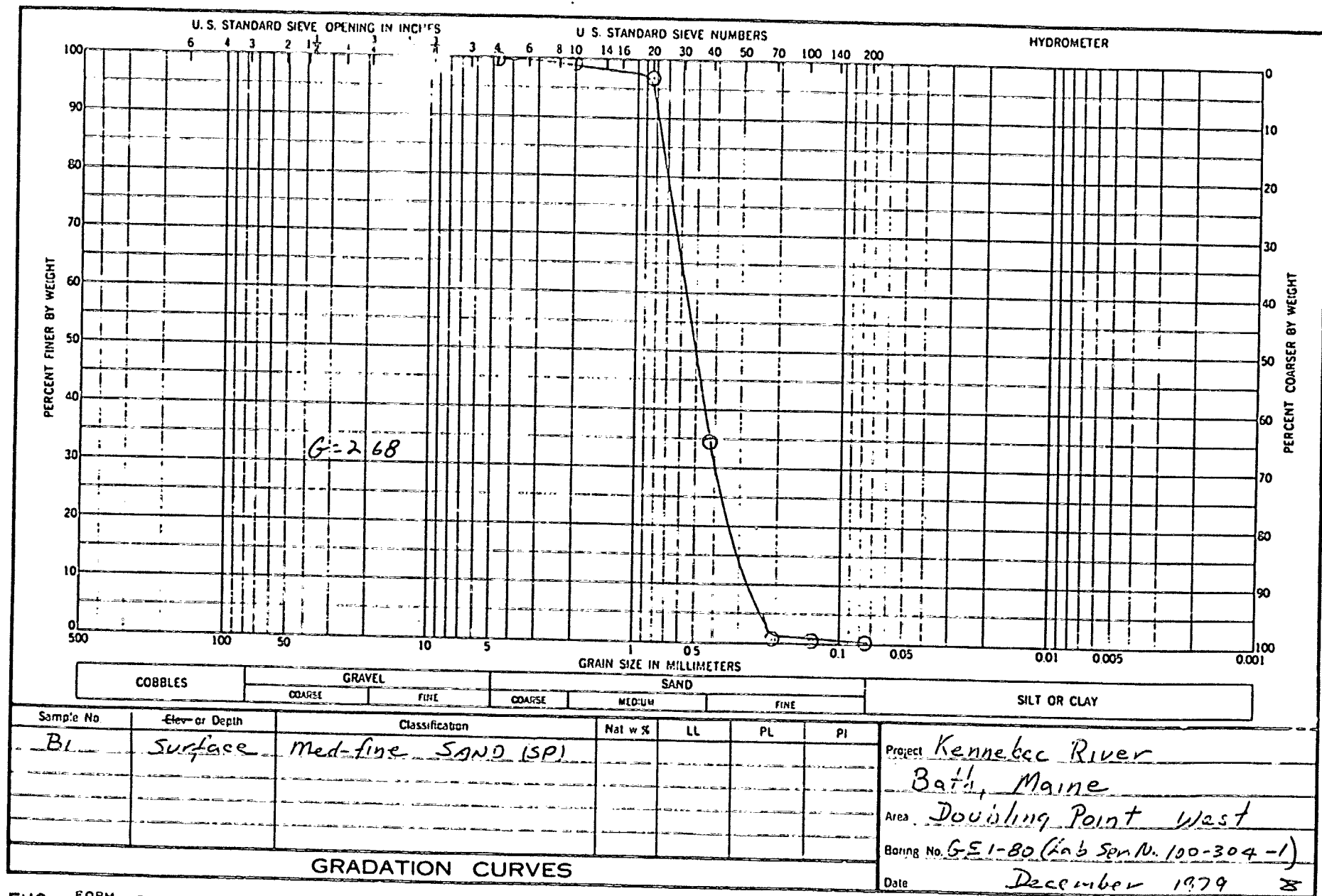
APPENDIX B

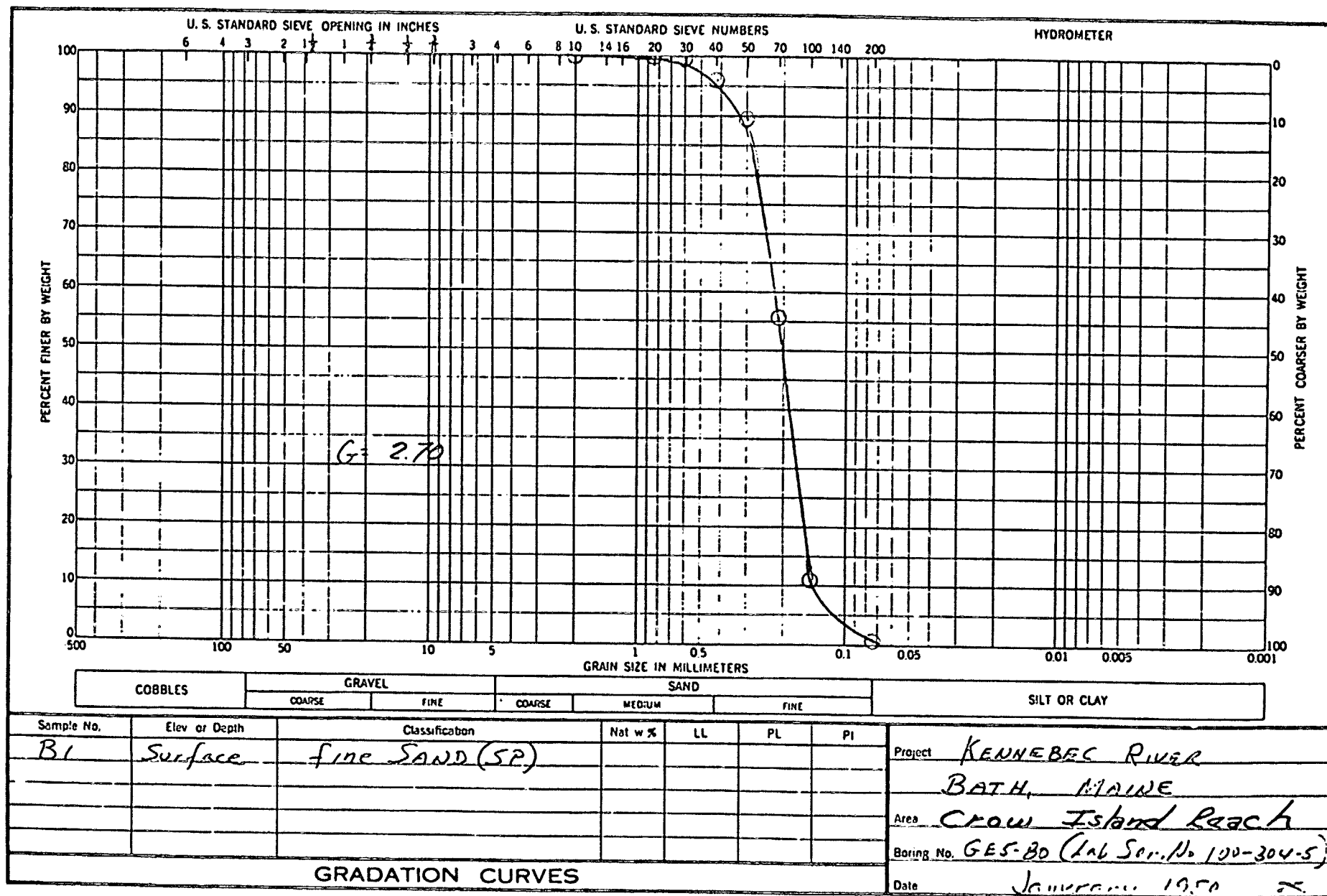
SEDIMENT GRAIN SIZE ANALYSIS

KENNEBEC RIVER, MAINE

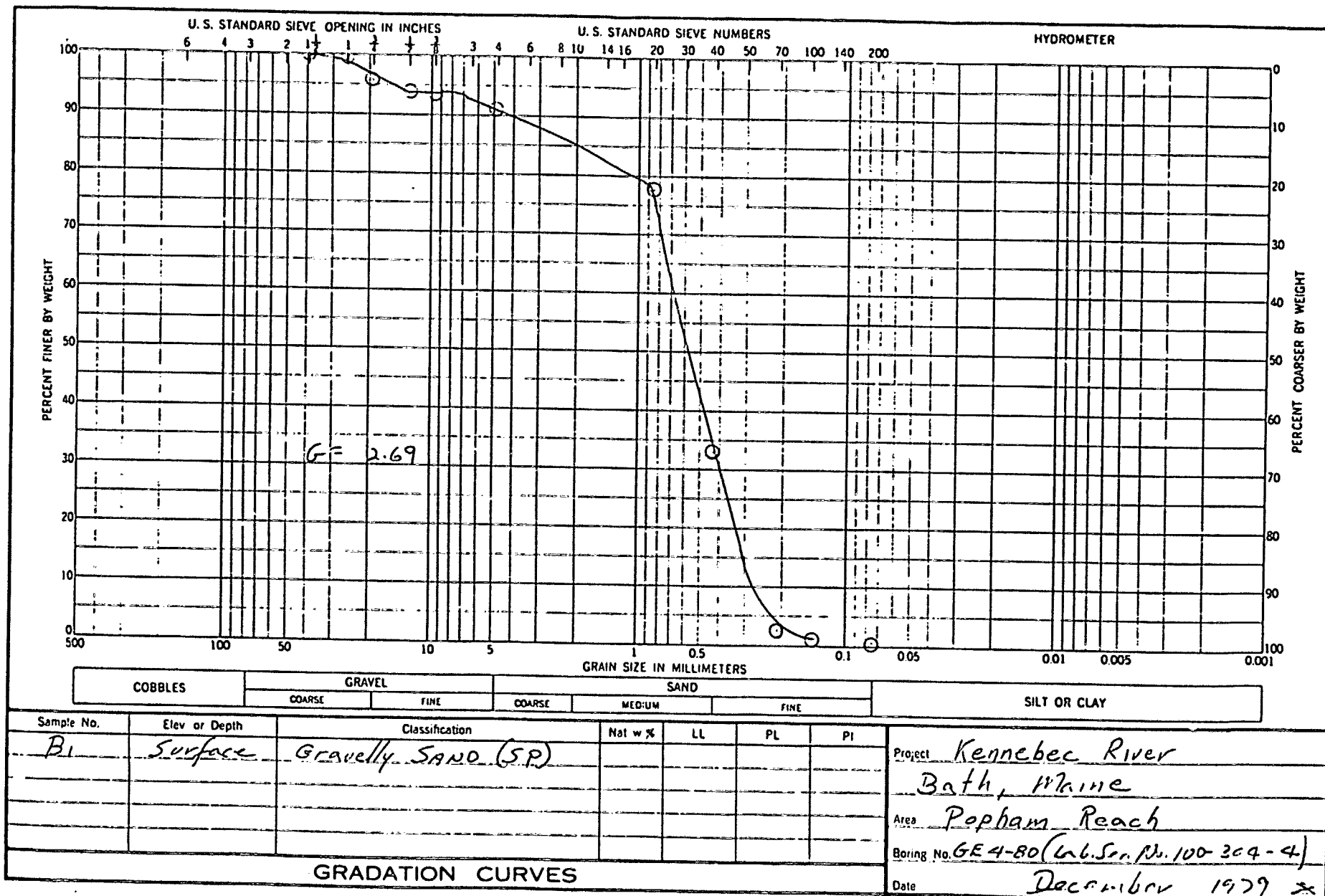


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GRADATION CURVES

Appendix C - Shortnosed Sturgeon (Acipenser brevirostrum) in the Kennebec River System

One estuarine species in the Kennebec River system, the Short-nosed sturgeon, (Acipenser brevirostrum) has been classified as "endangered" by the U.S. Department of the Interior, Fish and Wildlife Service. This species was first noted in Montsweag Bay during the summers of 1971 and 1972, when 31 short-nosed sturgeon were caught in gill-nets. One specimen was also caught in the upper Sheepscot River estuary. Findings were reported by Fried and McCleave (1973) in the Journal of Fishery Resources Board of Canada. Specimens also exist in the Kennebec River (Flagg, personal communication) and a tagging program tracing the movements of both short-nosed and Atlantic sturgeon is currently being undertaken by the Maine Department of Marine Resources. Limited data from these activities are included in a recent report by the Maine Department of Marine Resources. (Squiers, 1980).

During 1975 dredging of the Kennebec River, special precautions were taken to avoid impacts to short-nosed sturgeon. At that time, it was believed that the short-nosed was heavily dependent on low-salinity water and it was the recommendation of the Maine DMR, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service that dredging not take place unless bottom salinities at the dredge and dump-sites were above the three parts per thousand.

Since that time, new data indicate that short-nosed sturgeon in the Kennebec system are not so salinity dependent as once thought. A general migratory pattern has been established. (Squiers, 1980).

Dadswell reports that "wintering areas are in the estuarine lakes and the deep saline regions of the lower estuary." These wintering areas are noted to have salinities as high as 20 parts per thousand, with water temperatures of 2-8°C. Spawning takes place in turbulent areas in the main river channels during the spring flood. McCleave (personal communication) feels that spawning in the Kennebec will take place well above the dredging area. During June, the short-nose moves into summer feeding areas (shallow, eutrophic lakes, bays, and shore regions of the estuary).

A mid-summer decrease of sturgeon in the lower estuary takes place as some fish move upstream. In the late summer, the short-nose moves back down to the estuary, reoccupying the channel by late September or early October. From here they move to their wintering area. (Dadswell, 1976).

Dadswell (1976) also reports: "During both summer and winter the selected habitats are in the warmest regions available and where salinity is between 0.1 and 20 parts per thousand. Summer occurrence may also be influenced by competition with juvenile Atlantic sturgeon. In salinities greater than three parts per thousand Atlantics predominate over short-nose by 10:1. In fresh water, this dominance is reversed.

Squiers (1980) reports short-nosed sturgeon in shallow, warm bays during late spring and summer. His findings may be biased, however, by the fact that nets could not be used successfully in strong current areas such as the proposed dredging and disposal sites. The general distribution pattern observed to date suggests a minimal temporary disturbance to individual adults and juveniles would occur during dredging and disposal operations in June, and no significant impact on the survival of the species. Critical habitat for this species has not been determined at this time.

APPENDIX D - A DISCUSSION OF BEACH NOURISHMENT AS A DISPOSAL ALTERNATIVE
FOR THE KENNEBEC RIVER

It is the opinion of all of the State and local officials with whom this project has been discussed that beach nourishment on eroding portions of Popham (Hunnewell) Beach is the best alternative for disposal. The material, clean sand, would be used as a resource, and the environmental effects of open water disposal would be avoided. Beach nourishment in an open-ocean area such as this has rarely been attempted in the northeast, and is costly.

Benefits of beach nourishment would accrue primarily to those property owners whose shorefront land has been lost to erosion. For this reason, any extra costs incurred by beach disposal would normally require local (non-Corps) funding. In this case, however, two factors argue against this requirement.

- * use of dredged material as a resource, wherever possible, is being emphasized by the Corps.

- * there is at least a possibility in some people's opinion that Corps dredging in the Kennebec River has resulted in the erosion that Popham Beach is now experiencing by depriving it of sand normally supplied by the Kennebec.

This second point demands further investigation, as it finds the State of Maine and the Corps holding differing opinions on cause and effect relationships of the erosion of Popham Beach. The State of Maine (specifically a former State Geologist) believes that a strong casual

relationship exists, pointing out that recent erosion of Popham Beach coincided with the Corps dredging of the Kennebec, which started in 1940 (Timson, personal communication).

The State believes that the Kennebec supports an integrated bedload transport system which results in a net downstream movement of sand from Merrymeeting Bay to the sea.

Dredging, in their opinion, interrupts this system in two ways: 1) material dredged in the river and deposited at sea is removed from the system and lost to Popham Beach, resulting in erosion, and 2) material dredged in the river and deposited in deep holes (such as the proposed river site) during the summer and fall months may, because of net bottom currents at that time, actually move upstream, thus delaying its arrival at Popham Beach, causing a net erosion there. The State points to the necessity of dredging upstream of the river disposal area every two to four years as evidence of a net upstream migration of material deposited in the river during past dredging operations.

According to the State, further indication of a cause and effect relationship between dredging and beach erosion is given by the fact that the total volume of sand dredged in the river since 1940 and either deposited in the river or at sea roughly equals the volume of sand (about 600,000 cubic yards) lost from Popham Beach during that time.

It is the position of the Corps of Engineers that no definitive link between the dredging and Popham Beach erosion has been shown. It is pointed out that Popham Beach represents a dynamic environment, with a long history of erosion and accretion. The current erosion has taken place as a part of this cycle, and is not linked to dredging. Further, it is pointed out that far less than 600,000 cubic yards of material has been lost to the system by sea-disposal. The Corps believes that the material dredged and deposited in the river is not removed from the effective sand transport system and will eventually find its way to Popham Beach.

An independent researcher from the Ira Darling Research Center of the University of Maine believes that available evidence neither indites in or exculpates the Corps in the Popham Beach situation (Nelson, personal communication). He agrees with Maine's contention that the ultimate source of sand for Popham Beach is the Kennebec River. He also agrees with the Corps characterization of the Popham area as inherently unstable. The possibility that dredging at the mouth of the river has "triggered" the erosion exists but is not conclusively proven, according to Nelson. A sand bar exists between Hunnewell Point (at Popham Beach) and nearby Wood Island which has been breached. This apparently contributes to the erosion and, regardless of fault, Nelson feels that the material which would ordinarily be dumped at sea could be placed on the bar. Use of the upriver disposal site remains a viable option, according to Nelson. Copies of key correspondence relating to this question, including a suggested field program for determining transport characteristics, are located in the literature (JBF Science Corporation, 1977).

A very recent report (Richardson, 1976) summarizes several past efforts at beach nourishment. The most detailed and relevant report (Norfolk District, 1976) described an operation at Virginia Beach, VA, which was somewhat similar to that which would be required at Popham Beach. A review of these reports yields these important points:

- (1) Most beach nourishment projects have been characterized by waters where a hydraulic pipeline dredge could be used.
- (2) Attempts at bottom dumping from hopper dredges or barges at locations from which sand was intended to migrate to the beach have not been successful.
- (3) The Popham Beach situation is similar to that at two previous sites: Virginia Beach, and Sea Girt, New Jersey. At those sites, hopper dredges with pumpout capability were combined with pipeline systems to move the material onto the beach. The system which would be required is schematically depicted in Figure 3.

In the U.S. Army Corps of Engineers' dredge fleet, medium class hopper dredges with pumpout capability have certain limitations. First, when such a dredge is fully loaded, it draws 24 feet of water. To be safe, the vessel would need to anchor in about 30 feet of water to discharge the sand. Second, these dredges pump sand only about 7,000 feet.

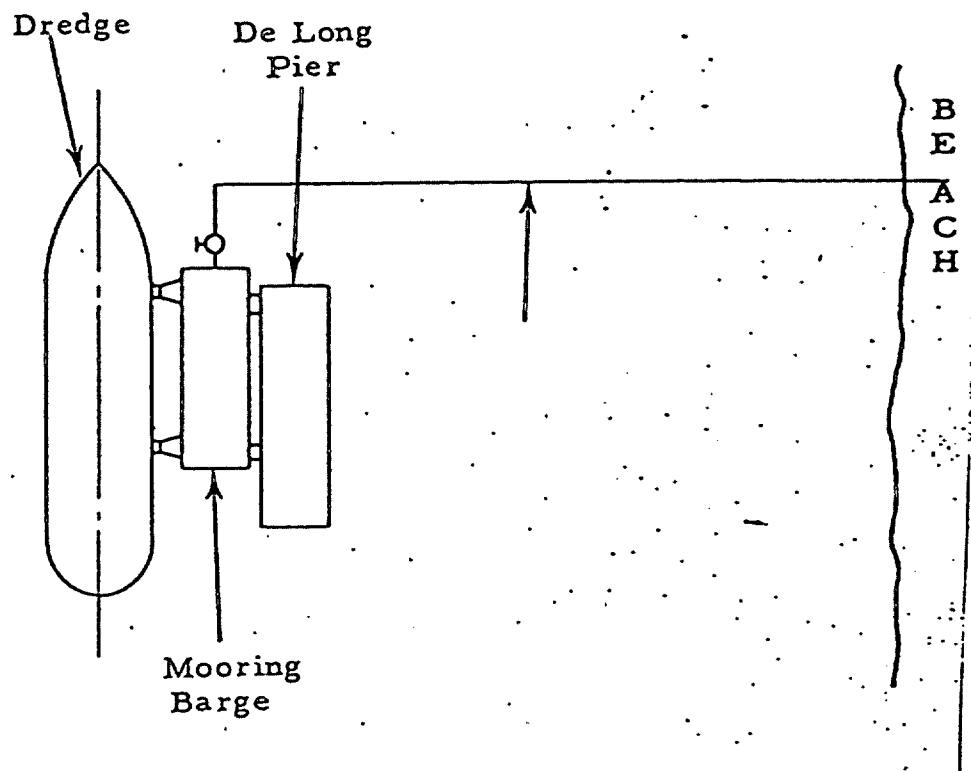


Figure 3. Schematic Plan View of System for Beach Nourishment with a Hopper Dredge (Adapted from Norfolk District, 1976)

Finally, they need a fairly sheltered anchorage to discharge the sand. Large class hopper dredges might be considered, but they draw about 30 feet. Authorized project depth is 27 feet.

If a hopper dredge with pumpout capability is secured for the Kennebec dredging, a pipeline system would have to be designed, contracted for and installed. The expense and effort required for this action would have to be funded by State or local interests.

The detailed engineering considerations for such a pipeline have been given by the Norfolk District (1976), and need not be repeated here. The cost per cubic yard retained on the beach at Virginia Beach in 1972 was \$2.37 for 572,414 cubic yards, including dredging. Some 36% of the material pumped ashore returned to the sea in runoff. This factor, and the cost figures cited above, are very site-specific and should be extrapolated to the Kennebec River/Popham Beach system only as approximations. The cost per cubic yard for a similar operation at Popham Beach would probably be much higher due to high fuel and equipment costs, difficult operating conditions and the relatively small amount of sediment to be transported.

APPENDIX E

LETTERS OF COORDINATION

NEDOD-N

Sullivan/ym/351✓
29 January 1980

Mr. Allen Pease
State Planning Director
State Planning Office
184 State Street
Augusta, ME 04333

Dear Mr. Pease:

Reference is made to a telephone call of 23 January 1980 by Mr. Teco Brown, Department of Environmental Protection and a meeting of 24 January 1980 between Mr. Brown and Mr. Sullivan of this office. Mr. Brown has requested that the Corps of Engineers apply for a Waste Water Discharge License for the proposed maintenance dredging of the 27-foot Federal channel in the Kennebec River.

Inclosed is an application for a Waste Water Discharge License. The application includes a revised figure of approximately 50,000 cubic yards of material to be dredged. This revised figure is based on more recent survey data, but it should be noted that we are still performing field surveys in the river and the final yardage to be removed has not been exactly determined as of this date. This project will be conducted by the United States Army Corps of Engineers in a manner consistent to the maximum extent practicable with the policies and goals of the State of Maine Coastal Zone Management Program.

Please contact Mr. Daniel Sullivan should you need any additional information; his telephone number is (617) 894-2400, ext. 351.

Sincerely,

Incl
as

J.C. WONG
Acting Chief, Operations Division



JOSEPH E. BRENNAN
GOVERNOR

STATE OF MAINE
DEPARTMENT OF CONSERVATION

STATE HOUSE STATION 19
AUGUSTA, MAINE 04333



RICHARD E. BARRINGER
COMMISSIONER

January 22, 1980

Division Engineer
U.S. Army Engineer Division
New England
424 Trapelo Road
Waltham, MA 02154

Gentlepersons:

We have reviewed the public notice for Maintenance Dredging, Kennebec River, Maine dated January 3, 1980 and find that the proposed disposal site between Jack-knife Ledge and Pond Island is a suitable locality.

In the event this area cannot be used because of weather, tidal or other conditions as described in the notice, we request that dredge material be placed in an area which would enhance replenishment of the system and increase beach development.

Sincerely,

Herbert Hartman
Director

/jk
cc: Norm Maxwell
Walter Anderson

24 JAN 1980



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I

J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

January 22, 1980

James C. Wong
Acting Chief, Operations Division
New England Division, Corps of Engineers
U. S. Department of the Army
424 Trapelo Road
Waltham, MA 02154

Re: NEDOD-N
EPA #7865

Dear Mr. Wong:

The following comments are for your consideration regarding the maintenance dredging of the twenty-seven foot Federal Channel in the Kennebec River, Maine, scheduled to occur in May.

We have several questions relative to the proposed disposal area in the Kennebec River which was used in 1975. Is this area maintained at its present depths by the bottom scour? Is it suitable for containment of dredged material? If this is a high energy location, not suitable for containment of dredged material, will resulting dispersion of the dredged material cause additional shoaling downstream? Will any additional shoaling downstream, if partially caused by disposal at this location require more frequent future dredging?

The Kennebec River has important anadromous and catadromous fish migrations each year. We believe this hopper dredge operation has the potential to cause a large turbidity plume in the river, which may adversely affect the fish migrations. We request that the Corps study this phenomenon in detail by conducting an airplane survey during hopper dredge operation at different tide levels, recording pertinent information such as wind direction and speed, tide level, and weather. Aerial photograph interpretation methods could then be applied to measure the extent and intensity of any turbidity plumes occurring during dredging.

This type of information will be of value for assessing potential adverse effects of hopper dredging in the Kennebec and for general turbidity plume information.

Please contact Edward Reiner at 223-5061 for any further details regarding our request for the turbidity plume study.

Sincerely,



Allen J. Ikalainen
Chief, Special Permits Development Section

cc: USF&WS, Concord, NH
NMFS, Gloucester, MA
Teco Brown, Bureau of Land Quality Control,
State House, Augusta, ME 04333



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. Box 1518
Concord, New Hampshire 03301

NEDOD-N

JAN 21 1980

Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Sir:

We have reviewed the Public Notice concerning the maintenance dredging of the Kennebec River Federal navigation channel in the spring of 1980. These comments are submitted in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

On December 18, 1979, we attended a planning meeting on the Kennebec River maintenance dredging at the Maine Department of Marine Resources, Boothbay Harbor, Maine. At this time we indicated our displeasure with the inadequate planning of this project. This Federal navigation channel was last maintained in 1975. During the planning for this action we made a series of recommendations which we note have not been included in the Public Notice. Therefore, we are repeating those recommendations:

1. Pre-dumping and post-dumping soundings be performed on the (riverine) dump site.
2. Any future dredging only be conducted during the months of October and November.
3. A suitable "on land" disposal site must be secured and utilized, including beach restoration where applicable.

We understand that approximately 100,000 cubic yards of clean sandy material is proposed to be removed from the Popham, Crow Island and Doubling Point Reaches of the Federal channel. The work is proposed for late April or May. The major fishery resources within the project area are anadromous species, including alewife, American smelt, American shad, Atlantic salmon, blueback herring, sturgeon (both Atlantic and shortnose), and striped bass. The catadromous American eel is also present. The period April through September is when these species are most active in the Kennebec River.

The wildlife resources of the project area include significant colonial nesting bird resources. These colonies are located at:

North Sugarloaf Island

- 300-400 pair Common Terns - second largest colony in the State
- 300-400 pair Arctic Terns - third largest colony in the State
- 50 pair Roseate Terns - largest colony in the State

Pond Island

- 50 pair Common Eider
- 225 pair Herring Gull
- 100 pair Great Black-backed Gull

Wood Island

- 25 pair Common Eider
- 75 pair Herring Gull
- 25 pair Great Black-backed Gull

Morse Point

- 50 pair Least Tern - one of four colonies in the State

The nesting period for these birds extends from May through July, at which time these birds are most sensitive to disturbance.

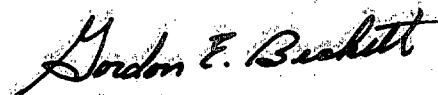
Due to anadromous fishes and wildlife of the project area, we recommend that dredging be performed only during the period October through March.

Two disposal sites are being considered: (1) a previously used riverine site; and (2) an offshore area between Jackknife Ledge and Pond Island. The use of the riverine site is unacceptable because the deep, narrow nature of the river disposal site, combined with strong river and tidal currents, carries the spoil disposal downstream. This simply perpetuates dredging projects further downstream. We also consider it unlikely that the material deposited offshore will end up on Popham Beach, as has been suggested.

There is a definite need for beach nourishment on Popham Beach. Therefore, we recommend Popham Beach have the highest priority as a disposal site. However, we would not oppose other beach restoration where applicable. Another beneficial use of the spoil material is to create suitable nesting areas for terns on existing islands and isolated beaches previously discussed. This essentially sets back plant succession. Perhaps Section 150 funds would be available for this purpose.

In summary, we recommend that the work is performed during October through March and beneficial uses or upland disposal sites be found for this clean sandy material. We will appreciate your advising us of your action on these recommendations.

Sincerely yours,



Gordon E. Beckett
Supervisor

Donevan/ym/322
Dupee/235

7 January 1980

NEDOD-N

Mr. Allen E. Peterson, Jr.
Regional Director
National Marine Fisheries Service
Federal Building
14 Elm Street
Gloucester, MA 01930

Dear Mr. Peterson:

The purpose of this letter is to reactivate the consultation phase under Section 7 of the Endangered Species Act for maintenance dredging of three portions of the Kennebec River, ME, and the effect this dredging may have on the Shortnose Sturgeon, (Acipenser brevirostrum), which is on the Endangered Species list.

The last time maintenance dredging was performed on part of this river was in 1975 when 30,000 cubic yards of material were removed from the vicinity of Doubling Point and deposited in a deep hole in the main channel near Morse Cove. At that time the potential effect on the sturgeon was measured by taking salinity samples as agreed to by all parties concerned. The rationale for this was that fish would not be present in low salinity conditions.

We wrote to you on January 26, 1978 requesting formal consultation and raised three issues. By letter dated April 21, 1978 your agency responded to our letter and addressed the issues. Essentially, your main concern was to try and restrict dredging to the summer or autumn. Your letter went on to advise that dredging during other seasons would be treated on a case by case basis.

The government hopper dredge COMBER is presently scheduled to work in the New England Division during May 1980. Before proceeding to New England, the dredge will be undergoing shipyard repairs. Judging from previous experience the repair period may extend into May and subsequently delay the predicted dredging schedule. The dredge would work in the Cape Cod Canal for approximately two weeks before proceeding to the Kennebec River. The earliest that work could start in the Kennebec would be 15 May but the starting date may very well be in late May or

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7 January 1980

Mr. Allen E. Peterson, Jr.

early June. The dredging would start at the mouth of the river, proceed upstream and take approximately two weeks to complete.

Our policies require that we allow private contractors to bid against the government dredge. To allow time for the contract advertisement period we would appreciate your comments relative to the Endangered Species Act by 31 January.

If you have any questions or desire further information, please contact me at (617) 894-2400, ext. 322.

Sincerely,

Incl
as

J.C. WONG
Acting Chief, Operations Division

cc: Mr. John Hurst
Plang. Div. - Mr. Dupee
Engr. Div. - Nav. & BE Section
Nav. Br. File ✓

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Region
Federal Building, 14 Elm Street
Gloucester, MA 01930

April 21, 1978

Ralph T. Garver, Colonel
Acting Division Engineer
Department of the Army
Corps of Engineers
424 Trapelo Road
Waltham, MA 02154

Dear Colonel Garver:

This is in reference to your letter of January 26, 1978, which requested formal consultation under Section 7 of the Endangered Species Act. The request for consultation deals with the effect of dredging the Kennebec River, Maine on the shortnose sturgeon (*Acipenser brevirostrum*).

Your request addresses three issues:

1. Impact of proposed maintenance dredging and in-channel disposal upon the existence and survival of the species.

Dredging, if conducted during the summer, or preferably in autumn, when salinities in the proposed sites are highest, is unlikely to have a direct affect upon shortnose sturgeon. The spring spawning period and periods of low bottom salinity should be avoided. Some loss of potential food sources will occur through spoil removal and may also occur if the spoil is dumped back into the river. It is felt that this loss of potential food sources will not impact the population in an adverse or long term way. This judgement is enhanced if the spoils are removed from the river.

2. Extent of impact upon the habitat for that species.

Insufficient data is available to determine whether or not the proposed dredging sites below Bath are used as overwintering areas and in some related context might be "critical" habitat. Given the mobility of the species and the size and diversity of this estuarine system it is a value judgement that below Bath, critical habitat is not an issue at this time.

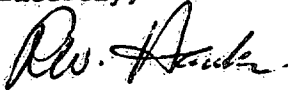


3. A determination as to whether or not the impact upon the habitat involves habitat critical to its survival.

Inasmuch as the complete range of the species in this estuary has not been delimited an assessment of the extent of impact upon the total habitat for this species cannot be made. It is known that shortnose sturgeon in the Kennebec do concentrate at periods of low salinity in deepwater "pools" when salinity is highest. Some of these "pools" are below Bath. A value judgement, based on discussions with scientists studying this population, is that at this time dredging below Bath in the summer or autumn will not jeopardize the continued existence of shortnose sturgeon in the Kennebec River. Dredging at other sites above Bath or dredging at other seasons will have to be evaluated on a case by case basis.

In summary, we feel that although the data available is very limited the proposed dredging in the Kennebec will not have an adverse impact on the population of shortnose sturgeon in that estuary.

Sincerely,



William G. Gordon
Regional Director



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF:

NEDPL-R

Mr. Howard N. Larsen
Regional Director
U.S. Department of the Interior
U.S. Fish and Wildlife Service
One Gateway Center, Suite 700
Newton Corner, Massachusetts 02158

Dear Mr. Larsen:

This correspondence is to formally request consultation under Section 7 of the Endangered Species Act of 1973. The endangered species is the shortnose sturgeon (Acipenser brevirostrum) and the project is the Kennebec River, Maine.

The Federal Register, Volume 41, No. 208 (27 October 1976) lists this species as endangered throughout its entire range. This species was first noted in Montsweag Bay during the summer of 1971 and 1972 and the findings were reported by Fried and McCleave (1973) in the Journal of Fishery Resources Board of Canada. Specimens also exist in the Kennebec River (Lou Flagg, personal communication and a tagging program has been initiated by the Maine Department of Marine Resources to trace their movements.

We request that you make determinations on the following:

1. Impact of proposed maintenance dredging and in-channel disposal upon the existence and survival of the species.
2. Extent of impact upon the habitat for that species.
3. A determination as to whether or not the impact upon the habitat involves habitat critical to its survival.



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Mr. Howard N. Larsen

26 January 1978

Please find inclosed a project description, and map of the project area. Should you have any questions or require further information on this subject, please contact Mr. Chase of the Environmental Analysis Branch at (617) 894-2400, ext. 236.

Sincerely yours,



RALPH T. GARVER
Colonel, Corps of Engineers
Acting Division Engineer

Incl
As stated